

Patent Claims

5 1. Method for the focussing of X-rays for the realization of an X-ray-zoom optical system, wherein,

by means of the alteration of the distances of two oppositely arranged semi-lenses, the focal lengths can be adjustably set.

10 2. Method according to Claim 1 wherein

15 the X-ray light emitted with the help of a point source is captured in a relatively large solid angle and is bundled to a parallel beam, and this parallel beam enters a second polycapillary semi-lens which focuses this on a point with the required distance.

20 3. Method according to Claim 1 wherein

a cylindrical monicapillary is used for the purpose of reduction of radiation losses between the two semi-lenses.

25 4. Device for focussing of X-rays for the realization of an X-ray-zoom optical system wherein,

30 in a housing (6), at least two semi-lenses (2, 3) opposite each other are adjustably arranged to each other with regard to their distance.

5. Device according to Claim 4,
wherein
a capillary (4) is arranged between the semi-lenses
(2, 3).

6. Device according to Claim 5,
wherein
the capillary (4) is a cylindrical monocapillary.

7. Device according to Claim 4,
wherein,
for the purpose of further beam manipulation,
further structural elements (5) are integrated in
the housing (6).

8. Device according to Claim 7,
wherein
the structural elements (5) are crystals for the
monochromatization of the beam and/or filters as
absorbers for the suppression of the long-wave beam
constituents and the $K\beta$ -lines and/or detectors for
the monitoring of the X-rays and/or shutters for
the attenuation of the beam.

9. Device according to Claim 4,
wherein
further elements with the following functions are
attached to the beam outlet end of the housing:

- detector assembly group with pre-amplifier which has a solid geometry for the analysis of the primary beam (inclination determines the distance between outlet of the optical unit and the specimen surface)
- two optical point sources, such as lasers with whose help the exact distance between the excitation and measurement arrangement to the specimen surface can be adjustably set
- a CCD-camera with an optical unit which allows the visual observation of the specimen surface.

10. Device according to Claim 4,

wherein

the housing (6) has a multi-part design and the alteration of the distances of the semi-lenses (1a, 1b) is performed by means of a rotary mechanism.

11. Device according to Claim 10,

wherein,

the rotary mechanism interacts with high-precision threads.